

Solar activity was at very low to low levels during the period. The period started off with an isolated C1/Sf flare at 10/1424 UTC from Region 1765 (N08, L=052, class/area Dai/210 on 09 June). By 11 June, Region 1765 was the only spotted region left on the visible disk but only managed to produce several B-class flares. On 12 June, rapid flux emergence was observed on the southwest quadrant of the solar disk and was numbered as Region 1768 (S11, L=356, class/area Dko/320 on 14 June). Although 1768 was the largest region on the visible disk during the rest of the period, it failed to produce any substantial flare activity. Solar activity continued at very low levels until early on 14 June, when Region 1769 (S22, L=261, class/area Cro/020 on 14 June) produced a long duration C1/Sf flare at 14/0031 UTC with an associated Type II radio sweep reported at 14/0021 UTC (431 km/s). Solar activity continued at low levels for the rest of the period with an isolated long duration C1 flare at 15/0400 UTC from Region 1774 (S19, L=238, class/area Cro/030 on 16 June) and a C1/Sf from Region 1769 at 16/1020 UTC. No Earth-directed coronal mass ejections were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached moderate levels through the period.

Geomagnetic field activity was at quiet to active levels. Unsettled to active levels with an isolated minor storm period at high latitudes was observed for the first half of 10 June due to possible activity associated with a shock arrival from a non Earth-directed CME from 07 June. During this time, total field (Bt) increased from approximately 4 nT to 9 nT while the Bz component varied from +8 nT to -8 nT before calming to more nominal levels by midday on 10 June. Solar wind speed increased briefly on 10 June from approximately 350 km/s to 419 km/s by 10/1514 UTC before decreasing back to 360 km/s by early 11 June. A slow increase in solar wind speed occurred on 11 to 12 June reaching maximum values near 476 km/s by 12/0430 UTC before declining to background levels through the rest of the period. The geomagnetic field was mostly quiet with an isolated unsettled period midday on 11 June. Conditions declined to quiet levels for the rest of the period.

### **Space Weather Outlook** **17 June - 13 July 2013**

Solar activity is expected to be at predominantly very low to low levels. There is a chance for M-class (R1-Minor) flares from 18 June through 08 July due to potential flare activity from old Region 1762 (S30, L=129) and two new regions observed in STEREO A/B EUVI 195 imagery located to the northwest of old Region 1765 (N08, L=052) and southwest of old Region 1757 (S08, L=148).

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels



from 22 June through 07 July due to coronal hole high speed stream (CH HSS) activity. Normal to moderate levels are expected for 17-21 June and 08-13 July.

Geomagnetic field activity is expected to be quiet to unsettled on 17-18 June due to weak CH HSS activity. Mostly quiet conditions are expected on 19-20 June. A recurrent CH HSS is expected to become geoeffective from 21-24 June causing unsettled to active levels with a chance for minor storm (G1-Minor) conditions. Mostly quiet levels are expected from 25-27 June. From 28 June through 01 July, another CH HSS is expected to be geoeffective causing unsettled to minor storm (G1-Minor) levels. Quiet levels are expected to return from 02-04 July. On 05-06 July, a weaker CH HSS is expected to cause quiet to unsettled levels. From 07 July until the end of the forecast period, mostly quiet conditions are expected.



### ***Daily Solar Data***

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
10 June	93	21	120	B1.4	1	0	0	6	0	0	0	0
11 June	90	14	50	B1.3	0	0	0	0	0	0	0	0
12 June	93	27	80	B1.5	0	0	0	3	0	0	0	0
13 June	99	45	130	B2.2	1	0	0	4	0	0	0	0
14 June	109	73	410	B3.1	0	0	0	4	0	0	0	0
15 June	111	101	510	B3.3	1	0	0	0	0	0	0	0
16 June	116	104	490	B3.6	1	0	0	3	0	0	0	0

### ***Daily Particle Data***

Date	Proton Fluence (protons/cm <sup>2</sup> -day -sr)			Electron Fluence (electrons/cm <sup>2</sup> -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
10 June	4.6e+05	9.8e+03	2.4e+03		2.1e+07	
11 June	2.9e+05	1.0e+04	2.6e+03		2.6e+07	
12 June	2.2e+05	1.0e+04	2.6e+03		2.4e+07	
13 June	2.2e+05	1.1e+04	2.6e+03		4.4e+07	
14 June	1.5e+05	1.0e+04	2.5e+03		5.6e+07	
15 June	1.3e+05	1.0e+04	2.5e+03		3.2e+07	
16 June	1.5e+05	1.0e+04	2.5e+03		3.8e+07	

### ***Daily Geomagnetic Data***

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
10 June	12	2-4-3-3-3-2-2-1	19	2-4-5-4-4-2-2-1	13	3-4-4-3-2-2-2-1
11 June	6	1-0-1-2-3-2-2-2	7	1-0-0-3-3-3-1-1	6	1-1-1-1-3-2-2-2
12 June	5	1-1-1-1-2-2-2-1	3	1-2-2-0-0-1-0-1	5	1-1-1-1-1-1-1-1
13 June	6	1-2-1-2-2-2-2-1	1	1-1-0-0-0-0-1-0	4	2-2-0-1-1-1-1-1
14 June	5	1-1-1-2-2-1-2-1	1	1-1-0-0-0-0-0-1	4	1-1-0-1-1-1-1-2
15 June	4	2-1-2-0-2-1-1-1	2	2-1-1-0-0-0-0-0	5	2-1-1-1-1-1-1-1
16 June	3	0-0-0-1-2-1-2-1	0	0-0-0-0-0-0-0-1	3	1-0-0-1-1-1-1-1

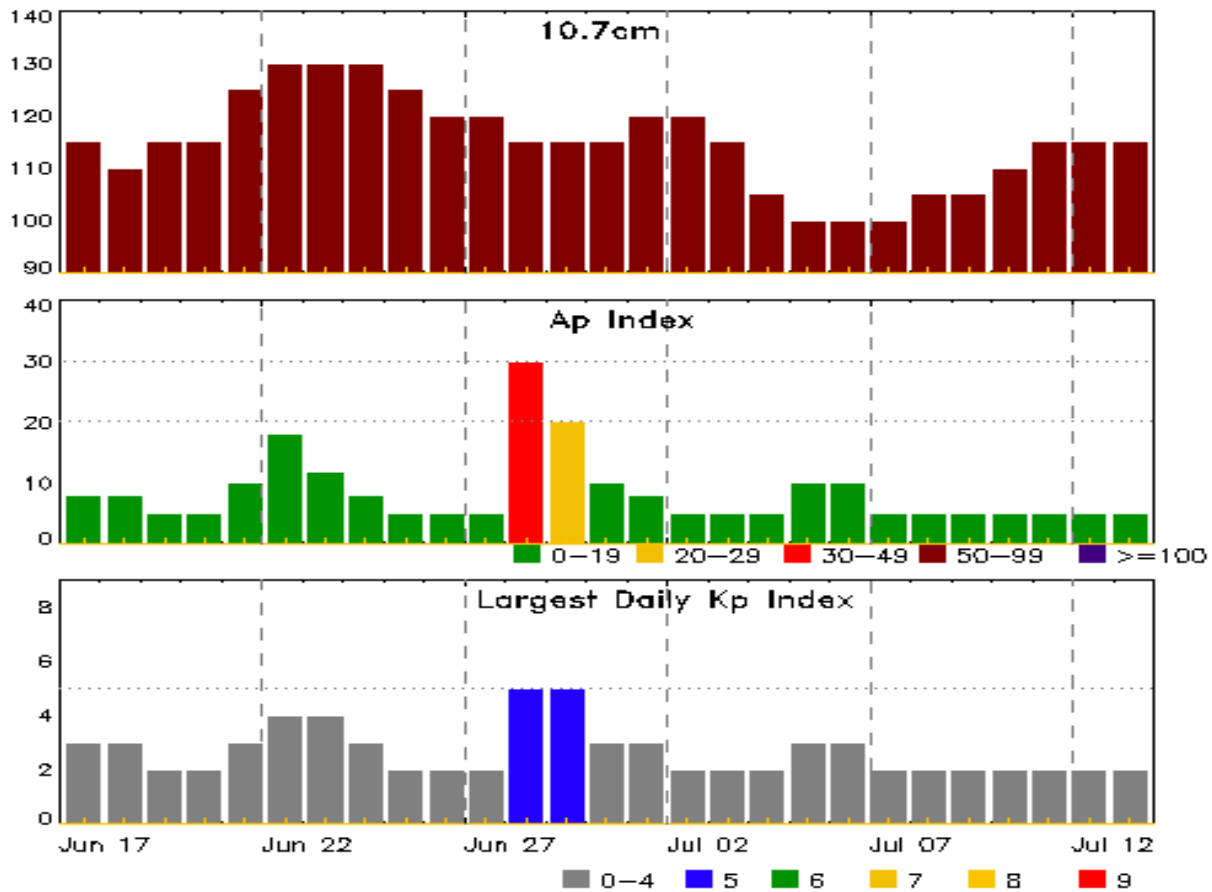


### *Alerts and Warnings Issued*

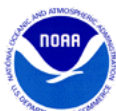
<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
10 Jun 0515	WARNING: Geomagnetic K = 4	10/0515 - 0900
10 Jun 0520	ALERT: Geomagnetic K = 4	10/0520
10 Jun 0834	EXTENDED WARNING: Geomagnetic K = 4	10/0515 - 1200
14 Jun 0109	ALERT: Type II Radio Emission	14/0012



## Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
17 Jun	115	8	3	01 Jul	120	8	3
18	110	8	3	02	120	5	2
19	115	5	2	03	115	5	2
20	115	5	2	04	105	5	2
21	125	10	3	05	100	10	3
22	130	18	4	06	100	10	3
23	130	12	4	07	100	5	2
24	130	8	3	08	105	5	2
25	125	5	2	09	105	5	2
26	120	5	2	10	110	5	2
27	120	5	2	11	115	5	2
28	115	30	5	12	115	5	2
29	115	20	5	13	115	5	2
30	115	10	3				



## ***Energetic Events***

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		II	IV
									245	2695		

**No Events Observed**

## ***Flare List***

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
10 Jun	0945	0951	0954	B3.4			1765
10 Jun	1049	1052	1054	B2.3			1765
10 Jun	1213	1218	1222	B4.6	SF	N08W38	1765
10 Jun	1236	1240	1242	B3.6	SF	N09W42	1765
10 Jun	1252	1253	1257	B2.2	SF	N10W38	1765
10 Jun	1335	1341	1347	B7.9	SF	N08W39	1765
10 Jun	1418	1424	1427	C1.9	SF	N11W38	1765
10 Jun	1553	1557	1601	B2.3	SF	N08W40	1765
10 Jun	1729	1733	1736	B2.2			1765
10 Jun	1835	1839	1842	B2.7			1765
12 Jun	1526	1528	1535		SF	S20E80	
12 Jun	1600	1605	1609		SF	S20E80	
12 Jun	1616	1622	1626		SF	S20E80	
12 Jun	1926	1945	2036	B4.4			
13 Jun	0044	0048	0056	B3.2			
13 Jun	0317	0322	0328	B3.5			
13 Jun	0428	0432	0438	B4.5			
13 Jun	0821	0825	0828	B4.1			
13 Jun	0920	0927	0933	B7.2	SF	S12W23	1768
13 Jun	0955	1006	1011	B9.3			1768
13 Jun	1124	1128	1139		SF	S12W24	1768
13 Jun	1436	1452	1456	B9.7	SF	S19E73	1770
13 Jun	2106	2110	2113	B3.6	SF	S10W30	1768
13 Jun	2353	0031	0115	C1.2	SF	S21E72	1769
14 Jun	0151	0155	0158	B7.2			1768
14 Jun	0438	0438	0459		SF	S11W33	1768
14 Jun	0533	0535	0539		SF	S11W34	1768
14 Jun	0724	0725	0727		SF	S19E66	1769
14 Jun	1015	1020	1027	B6.1			1772
15 Jun	0339	0400	0511	C1.0			1774
15 Jun	0929	0933	0937	B7.1			1775



## *Flare List*

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
15 Jun	2016	2020	2023	B5.2			1775
15 Jun	2300	2306	2313	B9.8			1775
16 Jun	0209	0213	0217	B7.0			1772
16 Jun	0230	0237	0246	B6.9			1768
16 Jun	0311	0314	0316	B6.1			
16 Jun	0532	0535	0537	B7.0			
16 Jun	0546	0552	0555	B6.9			1775
16 Jun	1013	1020	1026	C1.0	SF	S22E34	1769
16 Jun	1413	1418	1423		SF	S21E64	1775
16 Jun	1700	1713	1723		SF	S25E66	1775
16 Jun	1749	1752	1800	B6.2			1775
16 Jun	2058	2125	2133	B7.6			1769



## Region Summary

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1760															
29 May	N10E63	98	10	1	Axx	2	A	1				2			
30 May	N12E51	97	10	4	Bxo	4	B								
31 May	N12E38	97	20	2	Hrx	2	A		1			1			
01 Jun	N12E26	96	20	3	Cso	5	B								
02 Jun	N12E11	98	10	1	Hrx	1	A					2			
03 Jun	N12W03	99	0	1	Axx	1	A								
04 Jun	N12W17	99	plage												
05 Jun	N12W31	100	plage												
06 Jun	N12W45	101	plage												
07 Jun	N12W59	102	plage												
08 Jun	N12W73	102	plage												
09 Jun	N12W87	103	plage												
								1	1	0	5	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 99

<b>Region 1765</b>															
05 Jun	N09E17	50	30	3	Cro	5	B				2				
06 Jun	N09E04	52	70	6	Csi	13	B								
07 Jun	N08W10	53	190	7	Dai	17	BG				1				
08 Jun	N08W23	51	200	8	Dai	17	BG								
09 Jun	N08W36	52	210	9	Dai	19	B				2				
10 Jun	N09W50	52	120	10	Dai	11	B	1			6				
11 Jun	N09W64	54	50	10	Dao	4	B								
12 Jun	N09W78	55	30	1	Hsx	1	A								
								1	0	0	11	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 52





### ***Region Summary - continued***

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

#### ***Region 1767***

09 Jun	S17E42	334	10	5	Bxo	2	B								
10 Jun	S17E28	334	plage												
11 Jun	S17E14	336	plage												
12 Jun	S17W00	337	plage												
13 Jun	S17W14	337	plage												
14 Jun	S17W28	338	plage												
15 Jun	S17W42	339	plage												
16 Jun	S17W56	340	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 337

#### ***Region 1768***

12 Jun	S11W19	354	50	4	Dao	6	B								
13 Jun	S11W32	355	90	6	Dai	12	B				3				
14 Jun	S11W46	356	320	6	Dko	13	B				2				
15 Jun	S11W59	355	270	7	Dko	6	B								
16 Jun	S12W71	354	260	7	Dko	7	B								
								0	0	0	5	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 354

#### ***Region 1769***

13 Jun	S23E61	261	10	2	Bxo	2	B	1							
14 Jun	S22E49	261	20	7	Cro	3	B				2				
15 Jun	S22E35	260	20	6	Cro	2	B								
16 Jun	S23E24	258	10	1	Hsx	2	A	1			1				
								2	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 258

#### ***Region 1770***

13 Jun	S13E67	254	30	1	Hsx	1	A								
14 Jun	S13E53	257	40	2	Hsx	1	A								
15 Jun	S14E41	255	60	2	Hsx	1	A								
16 Jun	S13E27	255	50	2	Hsx	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 255



### *Region Summary - continued*

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

#### *Region 1771*

14 Jun	S12E64	246	20	1	Hrx	1	A								
15 Jun	S11E51	245	10	1	Axx	1	A								
16 Jun	S15E42	241	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 241

#### *Region 1772*

14 Jun	S20E55	255	10	5	Bxo	5	B								
15 Jun	S20E40	255	30	8	Cri	8	B								
16 Jun	S20E29	255	60	9	Dai	10	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 255

#### *Region 1773*

15 Jun	N04E64	232	30	1	Hrx	1	A								
16 Jun	N04E51	233	40	3	Cao	8	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 233

#### *Region 1774*

15 Jun	S18E58	238	30	3	Bxo	1	B	1							
16 Jun	S19E46	238	30	3	Cro	2	B								
								1	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 238

#### *Region 1775*

15 Jun	S25E74	223	60	2	Hax	1	A								
16 Jun	S26E59	223	40	5	Dko	4	B				2				
								0	0	0	2	0	0	0	0

Still on Disk.

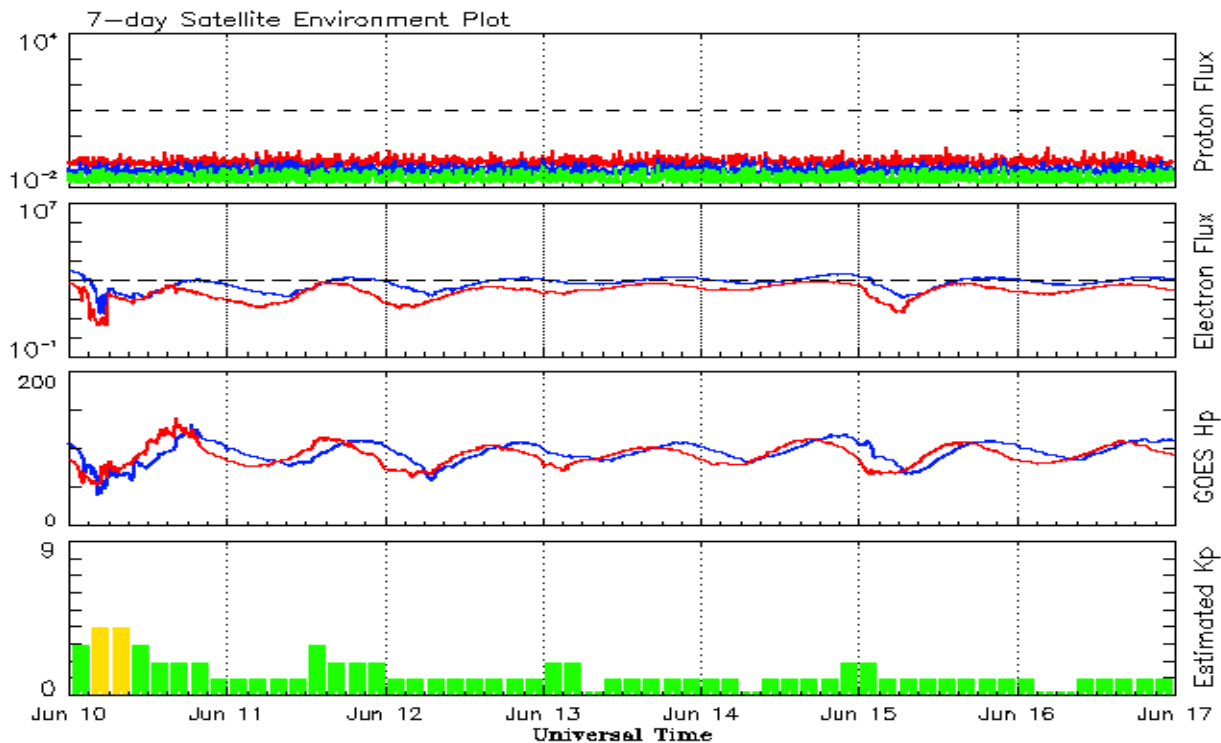
Absolute heliographic longitude: 223

**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
<b>2011</b>									
June	55.5	37.0	0.67	76.5	53.2	95.8	110.9	8	7.4
July	67.0	43.8	0.66	82.5	57.3	94.2	115.4	9	7.3
August	66.1	50.6	0.77	84.9	59.0	101.7	117.9	8	7.4
September	106.4	78.0	0.73	84.6	59.5	134.5	118.4	13	7.7
October	116.8	88.0	0.75	84.6	59.9	137.2	118.4	7	8.0
November	133.1	96.7	0.73	86.3	61.1	153.1	119.5	3	8.0
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
<b>2012</b>									
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.8	135.6	119.5	13	8.3
August	85.8	63.0	0.74	83.1	58.2	115.7	119.2	7	8.1
September	84.0	61.4	0.73	83.7	58.1	123.2	118.9	8	7.8
October	73.5	53.3	0.73	85.0	58.6	123.3	119.2	9	7.4
November	89.2	61.8	0.69	87.3	59.7	120.9	120.1	6	7.3
December	60.4	40.8	0.68			108.4		3	
<b>2013</b>									
January	99.8	62.9	0.63			127.1		4	
February	60.0	38.0	0.63			104.4		5	
March	81.0	57.9	0.71			111.2		9	
April	112.8	72.4	0.64			125.0		5	
May	125.5	78.7	0.63			131.3		10	

**Note:** Values are final except for the most recent 6 months which are considered preliminary.  
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 10 June 2013*

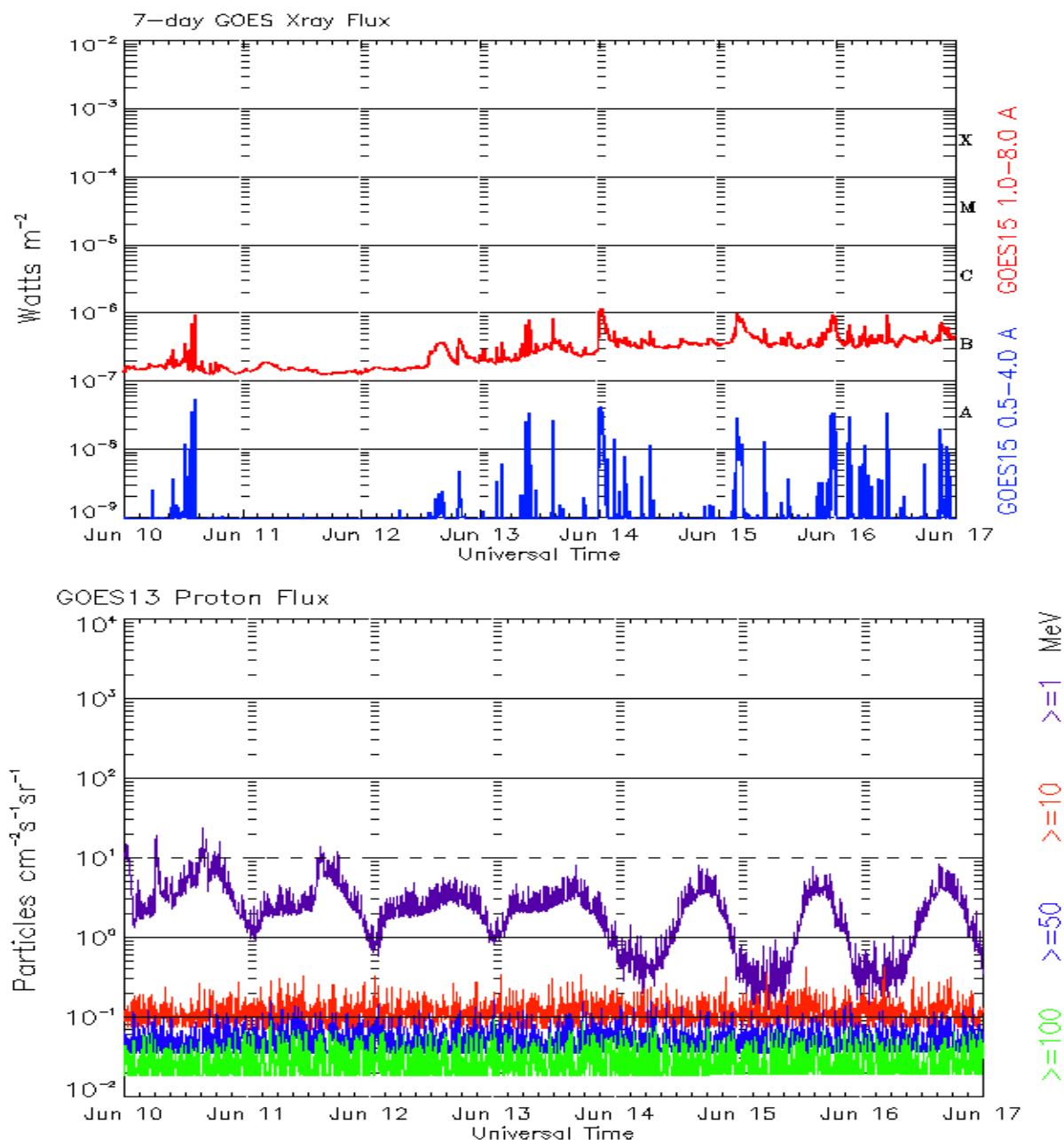
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



*Weekly GOES Satellite X-ray and Proton Plots  
Week Beginning 10 June 2013*

The x-ray plots contains five-minute averages x-ray flux ( $\text{Watt/m}^2$ ) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged integral flux units (pfu = protons/ $\text{cm}^2$  -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds:  $>1$ ,  $>10$ ,  $>30$ , and  $>100$  MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.



## ***Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)***

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**Notice:** The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned.  
Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

<http://spaceweather.gov/weekly/> -- Current and previous year

<http://spaceweather.gov/ftpmenu/warehouse.html> -- Online archive from 1997

<http://spaceweather.gov/ftpmenu/> -- Some content as ascii text

<http://spaceweather.gov/SolarCycle/> -- Solar Cycle Progression web site

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[http://spaceweather.gov/weekly/Usr\\_guide.pdf](http://spaceweather.gov/weekly/Usr_guide.pdf) -- User Guide

